UNI-T®

UNI-TREND INTERNATIONAL LTD
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UT391

Operating Manual

Laser distance meter

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I UT391 Product Introduction

UT391, Handheld Laser Distance Meter, is specially designed for users. It is a meter with high-precision and multi-function distance measurement. UT391 can measure distance, area and volume, Pythagorean Laws can also be used in UT391 to measure indiectly.UT391 which is light, easy to use and reliable to measure,can make sure your measurement more accuracy, easier and faster.

UT391 can widely apply to Construction, Upholster, Property, Traffic, Fire-Fighting, Gardens, Urban Planning, Water Mornitoring, Electric Power Overhaul,etc. As the replacer of traditional measuring instrument(for example,measuring tape),UT391 is your best choice.

II Unpacking Inspection

Unpack and check, if there is any damage or loss, contact with the nearest local sales service agency.

1. Mainframe	one unit
2. User manual	one copy
3. AAA battery(2×1.5V)	one piece
4. Carrying case	one unit
5. Mini screwdriver	one piece

III Safety Instruction

Permitted use

- Measuring distances
- Computing functions, e. g. areas and volumes
- Indirect Measuring with Pythagorean

Prohibited use

- Using the instrument without instruction
- Using outside the stated limits
- Deactivation of safety systems and removal of explanatory and hazard labels
- Opening of the equipment by using tools (screwdrivers, etc.), as far as

not specifically permitted for certain cases

- Carrying out modification or conversion of the product
- Use of accessories from other manufacturers without the express approval of UNI-T.
- Deliberate or irresponsible behavior on scaffolding, when using ladders, when measuring near machines which are running, or near parts of machines or installations which are unprotected
- Aiming directly into the sun or glare
- Deliberate dazzling of third parties; also in the dark Inadequate safeguards at the surveying site (e.g. when measuring on roads, construction sites,etc.)

Laser classification

The UT391 produced a visible laser beam which emerges from the front of the instrument.
Laser Class II products:
Do not stare into the laser beam or direct it towards other people unnecessarily. Eye protection is normally afforded by aversion responses including the blink reflex.

WARNING

Looking directly into the beam with optical aids (e.g. binoculars, telescopes) can be hazardous.

Precautions:
Do not look directly into the beam with optical aids.

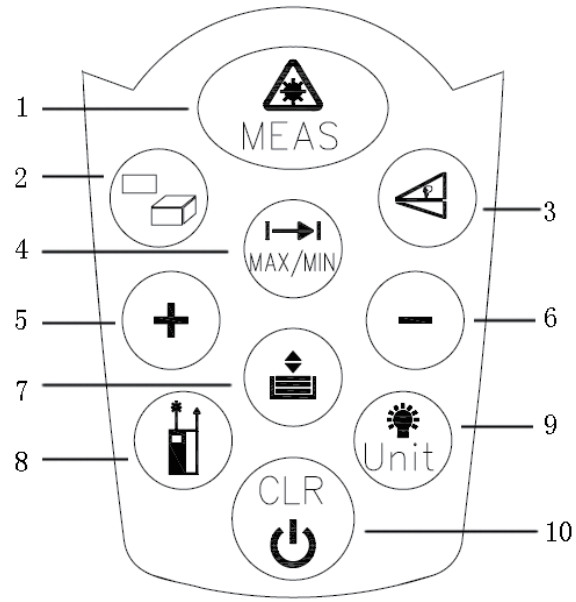
★ CAUTION

Looking into the laser beam may be hazardous to the eyes.
Precautions:
Do not look into the laser beam. Make sure the laser is aimed above or below eye level.

IV Meter Structure

Keypad

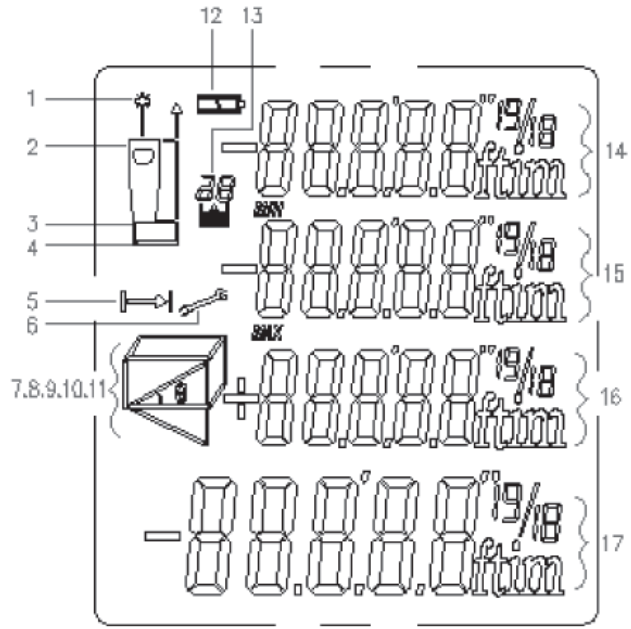
1. ON / MEAS (On/measuring) button
2. Area / volume button
3. Indirect measurement button
4. Continuous measurement button
5. Plus (+) button
6. Minus (-) button
7. Storage button
8. Reference level button
9. Illuminating button
10. Clear/off button



Meter Structure

LCD Display

1 Laser active
2 Reference level (front)
3 Reference level (rear)
4 Reference level (End piece)
5 Continuous measurement
6 Instrument error warning
7,8,9,10,11
Variable measuring functions
– Length measurement
□ Area measurement
⧈ Volume measurement



◿ Indirect (2 times) measurement
◹ Indirect (3 times) measurement

12 Battery status
13 Historical memory, call up values
14 First value display line, minimum value
15 Second value display line, maximum value
16 Third value display line
17. Summary line for last measure or calculation result

V Setting and Operation of Meter

Switching on and off

MEAS Switches on the instrument and laser.

CLR Press this button lo longer to switch off the instrument..
The instrument switches off automatically after three minutes of inactivity.

CLEAR button

CLR The last action is cancelled or the data display is cleared, while making

measurements. If in mode of History storage each single measurement will be deleted from the memory after click the button.

Reference level setting

The default reference setting is from the rear of the instrument.

Press this button to take the selection from the front edge , A special beep sounds whenever the reference setting is changed. After a re-startup the reference returns automatically to the default setting (rear reference). Press this button again to take the next selection from end piece edge.

Press this button, to set the rear reference again.
In a word, to select the reference level, push button 8 repeatedly until the required reference level is indicated in the display. Each time after switching on, the rear edge of the measuring tool is preset as the reference level.

Display illumination

Unit Click illumination button of the display can be switched on or off, User can trigger the function when he/she is in darkness situation. The value is clear viable on the LCD.

Distance unit setting for instrument

Unit Click the button longer change the next type of unit, m, ft. in, ft/in then to continue click the button for the next unit selection.

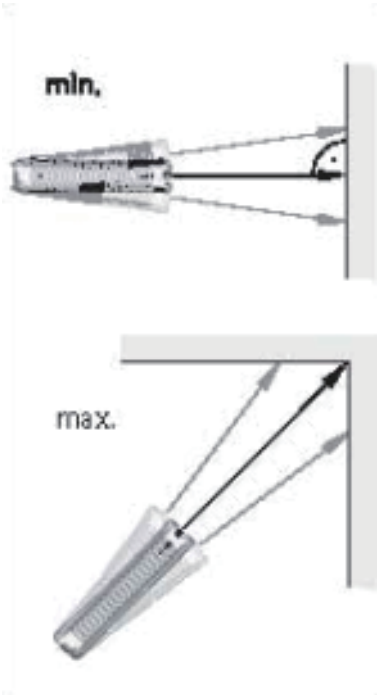
Measuring

Single distance measurement

MEAS Press to activate the laser. Press again to trigger the distance measurement. The measured value is displayed immediately.

Continuous Measurement & Max and Min Measurement

Setting and Operation of Meter



The continuous measurement function (tracking) is used for the transferring of measurements, e.g., from construction plans. In continuous measurement mode, the measuring tool can be moved close to the target, whereby the measured value is updated approx. every 0.5 seconds. The corresponding dynamically maximum and minimum values are displayed in the first and second line.

As an example, the user can move from a wall to the required distance, while the actual distance can be read continuously. For continuous measurement, push button (MAX/MIN) until the indicator for continuous measurement

appears in the display. And press it again or MEAS to stop the function. The function is terminated after continuous measurement with 5 minutes.

Functions

Addition / subtraction Distance measuring.

(+) The next measurement is added to the previous one, then press MEAS the second measured value is shown and the result is shown automatically.

(−) The next measurement is subtracted from the previous one. Then press MEAS the result is always shown in the summary line with the previous value in the second line.

CLR ⏻ The last step is cancelled.

Area

Press once. The symbol appears in the display.
Press MEAS button to take the first length measurement (e.g. length).
Press MEAS again to take the second length measurement (e.g. width).
After taking the second measurement, the area/surface is automatically calculated and displayed in the summary line. The last individual measured value is indicated at the second line in the display.

Volume

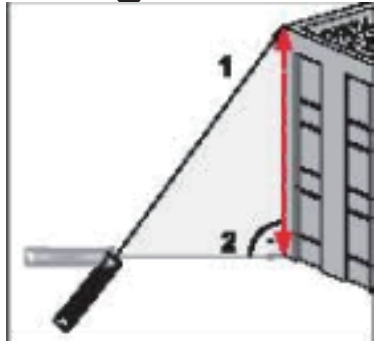
For volume measurements, push button twice until the indicator for volume measurement appears in the display.
Afterwards, Press this button MEAS to measure the length,
Press this button MEAS for width

Press button MEAS to take the height,
After taking the third measurement, the volume is automatically calculated and displayed. The last individual measured value is not displayed.

Indirect measurement

when measuring heights that require the measurement of two or three measurements as following step:

using 2 measurements

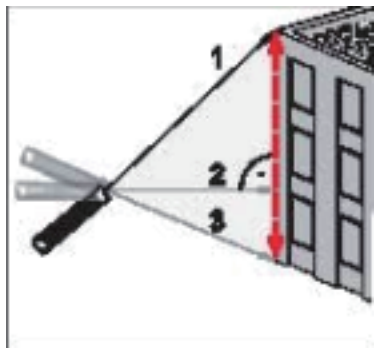


Press this button , the display shows. The laser is switched on.
MEAS Aim at the upper point (1) and trigger the measurement. After the first measurement the

value is adopted. The second distance to be measured flashes in the symbol. Keep the instrument as horizontal as possible. The tool default the measurement result as horizontal value.

MEAS Press this button to trigger the measurement; the measured value is displayed in the second line.At the same time, the result is displayed in the summary line, results in the secondary line.

using 3 measurements



Press this button twice; the display shows the following symbol .The laser is switched on.
Aim at the upper point (1) and trigger the measurement. After the first measurement the value is adopted. Keep the instrument as horizontal as

possible, the tools default the measurement result as horizontal value
The display shows the second line,
Aim to at the upper point (2) and Press MEAS measurement button. The value is adopted.
The display shows the third line,
Aim at the lower point and Press this button to MEAS trigger the measurement (3).The result is displayed in the summary line, the third results in the third lines at same time.

Historical storage

Continue press the next value of previous 20 records (measurements or calculated results) are shown in the reverse order.

Press (+) to retrieve the next value of 20 records .

Press (−) then retrieve the previous value of 20 records.

Press the (▤) then (CLR ⏻) button to erases the value of historical storage one by one in the reverse sequence.

VI Technical specifications

General Characteristics

- Measurement Distance 0.1m ~ 60m (4 in ~197 ft)
- Measurement Speed 3 times / s
- Battery Type AAA 2 x 1.5V
- Battery Life up to 3,000 measurements
- Battery indicator Three states: full, medium, low
- Dimension 116 x 49 x 28 mm
- Weight 100g (Including batteries)
- Laser Type 635nm, ＜1mW
- Laser Class Class II

- Dust Protect/Splash proof IP54
- Auto power off after 3 min
- Auto laser switch-off after 0.5 min

Environmental Requirements

- Altitude: 2000m
- Operating Temperature 0°C to +40°C(+32°F to +104°F)
- Storage Temperature -10 °C to +60°C (14°F to +140°F)

Following standards

- EN61326-1 EMC;
- EN60825-1 Laser Safety.

Specifications

Laser distance meter	UT391	
Basic functions	Range	Accuracy
Measuring distances	0.1m~60m*	± 1.5 mm**
	4 in ~197 ft	± 0.06 in
	Measuring units: m / in / ft	
Special functions		Explanation
Area, Volume Calculations	√	m^2 / ft^2 / m^3 / ft^3
Indirect Measuring with Pythagorean	√	Two or three measurements
Addition/Subtraction	√	
Continuous Measurement	√	
Max/Min	√	

Technical specifications

multi-line display	√	Up to four lines show
Reference level setting	√	Front edge or end piece edge
Buzzer indication	√	
Backlight	√	white
Auto Bias Technology™	√	Support for external calibration
error indication	√	Display error code
Hold	√	Automatic
History measurement recodes	√	20 records
Clear	√	
Keyboard Type	Super Soft-Touch (Long life) Over 1 Million Times	

* during daylight or if the target has poor reflection properties!
** in favorable conditions (good target surface properties, room temperature) up to 60 m. In unfavorable conditions, such as intense sunshine, poorly reflecting target surface (black surface) or high temperature variations, the deviation over distances above 10m may increase more.

VII Maintenance

⚠ Warning: during replacing battery or measuring, keep the sensitive mirror from scratch or dirt to avoid damaging the mirror or influencing the measuring precision; and do not charge the replaced battery to avoid explosion and safety accident!

Battery installation and replacement

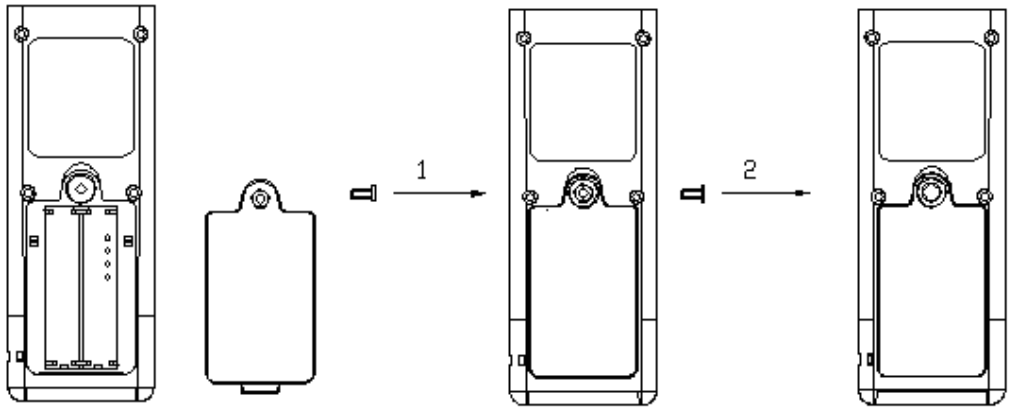
★ When the symbol ▯ flashes permanently in the display replace the battery immediately.

Use alkaline batteries only.

Remove the batteries before any long period of non-use to avoid the danger of corrosion.

As following steps:

- Turn of the screw, remove battery compartment lid.
- Insert batteries in the two space respectively, observing correct polarity.
- Close the battery compartment again, and fix the screw for reliability.



General maintenance

When the surface of meter is dirty, clean with wet cloth and neutral detergent, grinding miller and solvent are forbidden.

When the meter is damaged and needs to be repaired, please send it to the designated maintenance center of our company for repair by professional service man, do not repair it without authorization.

Especially in the process of using, keep the sensitive mirror of meter away from scratch or dirt to avoid damaging the mirror or influencing the measuring precision.

Remove the battery if it won't be used for a long time.

Troubleshooting – Causes and Corrective Measures

All message codes are displayed with either or "Error". The following errors can be corrected:

Code	Cause	Corrective Measure
204	Calculation error	Refer to user menu, repeat the procedures
208	Temperature too high The measuring tool is outside the operating temperature range from 0 °C to +40 °C	Cool down instrument, make it working in stable temperature environment

Maintenance

253	Temperature too high	Warm up instrument
255	Receiver signal too weak,	Use target plate or change a good refection
	measurement time too long	
256	Received signal too strong	Target too reflective use target plate or do not aim at strong light objective
Error	Hardware error and uncertainty error	Switch on/off the device several times. If the symbol still appears, then your instrument is defective. Please call your dealer for assistance

Maintenance

The Instruction is subject to change without further notice.

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